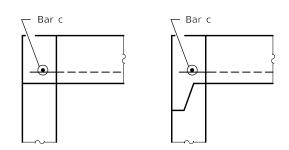


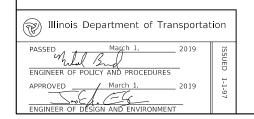
SECTION PARALLEL TO PIPE

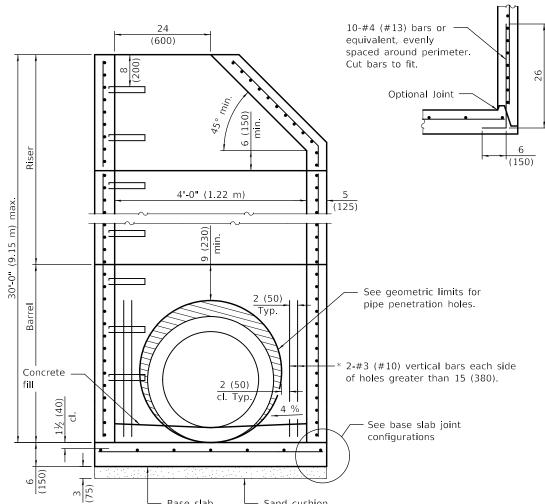
(Without conical top riser)



FLAT SLAB TOP JOINT CONFIGURATIONS

(Shown at access hole)





Sand cushion

10-#4 (#13) bars 10-#4 (#13) bars or equivalent, evenly evenly spaced drilled and spaced around perimeter. Cut bars to fit. grouted in place at center of slab Optional Joint (200) (150)Single-element shear key at center of slab

BASE SLAB JOINT CONFIGURATIONS

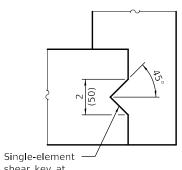
SECTION PERPENDICULAR TO PIPE

Base slab

* As an alternate, the barrel wall reinforcement may be reduced to riser wall reinforcement with #3 (#10) bars placed around the pipe penetration holes as shown. This option may be utilized when the pipe penetration holes are formed as opposed to cored.

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

- 1. A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 24 (600).
- 2. A minimum 12 (300) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
- 3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
- 4. Horizontal joints that intersect pipe penetration holes $\,>\,15$ (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
- 5. The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
- 6. Only pipe penetration holes \leq 15 (380) are allowed in riser sections.



shear key at center of slab

SHEAR KEY GEOMETRY

(Reinforcement not shown for clarity)

manufacturer's recommendations, except as noted.

GENERAL NOTES

The manufacturer shall ensure that all precast manhole

sections are additionally reinforced where required to resist

damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the

See Standard 602701 for details of manhole steps.

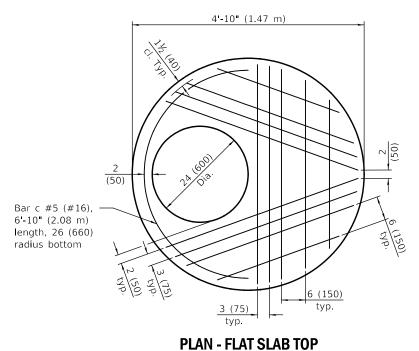
All dimensions are in inches (millimeters) unless otherwise

| DATE | REVISIONS | |
|--------|------------------------------------|---|
| 3-1-19 | Moved wall reinforcement from | |
| | inside face to middle. | |
| | | |
| 1-1-19 | Expanded / refined reinforcement | H |
| | options. Increased manhole depths. | |
| | | 1 |

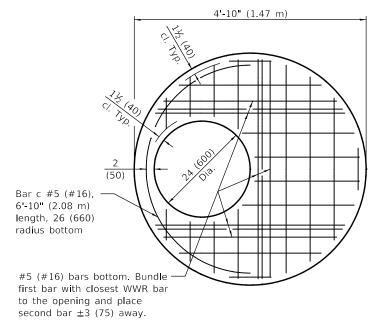
PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER

(Sheet 1 of 2)

STANDARD 602401-06



(Showing layout of reinforcement bars and c bars)

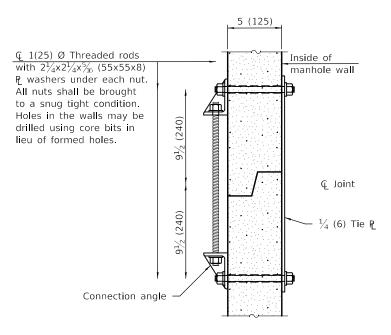


Illinois Department of Transportation

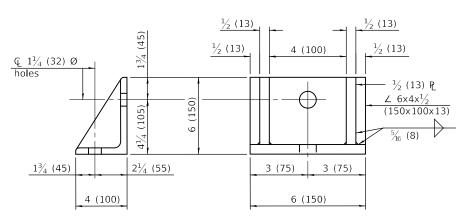
ENGINEER OF POLICY AND PROCEDURES

PLAN - FLAT SLAB TOP

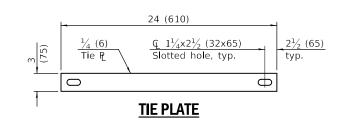
(Showing layout of welded wire reinforcement and c bars)



JOINT SPLICE



CONNECTION ANGLE



FLAT SLAB TOP REINFORCEMENT

| Location | WWR (each direction) | | Rebar | | |
|----------|-----------------------|----------------|---|----------------|----------|
| Location | A _s (min.) | Spacing (max.) | A _s (min.) | Spacing (max.) | Bar Size |
| Bottom | ** 0.62 sq. in./ft. | 6 | See plan view for rebar orientation and | | #5 |
| Mat | (1312 sq. mm/m) | (150) | spacing and this table for bar size | | (#16) |

^{**} Only one layer of WWR permitted to avoid congestion.

WALL REINFORCEMENT

| Location | Orientation | WWR or Rebar | | |
|----------|-----------------|------------------------------------|----------------|--|
| Location | Offentation | A _s (min.) | Spacing (max.) | |
| Riser | Circumferential | 0.12 sq. in./ft. (254 sq. mm/m) | 6 (150) | |
| | Vertical | 0.045 sq. in./ft. (95 sq. mm/m) | 8 (200) | |
| Barrel | Circumferential | 0.12 sq. in./ft. (254 sq. mm/m) | 6 (150) | |
| | Vertical | 0.16 sq. in./ft. (339 sq. mm/m) | 4 (100) | |

BASE SLAB REINFORCEMENT

| Location | Total Height | WWR or Rebar (each direction) | | |
|------------|-------------------|------------------------------------|----------------|--|
| | | A _s (min.) | Spacing (max.) | |
| Top Mat | ≤ 20 ft. (6.10 m) | 0.24 sq. in./ft. (508 sq. mm/m) | 10 (250) | |
| | > 20 ft. (6.10 m) | 0.24 sq. in./ft. (508 sq. mm/m) | 10 (250) | |

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER